

APPENDIX B

```
#
# Makefile to build test programs in patent application
#
CRCSRC = crc.C
MAINSRC = getrec.C

CRCOBJ = $(CRCSRC:.C=.o)
MAINOBJ = $(MAINSRC:.C=.o)

# Solaris complier
#CFLAGS = -O2
#CPP = CC
#CC = cc

# gnu complier
CFLAGS = -O2
CPP = g++
CC = gcc

# Standard rules for making C...
.C.o :
    $(CPP) $(CFLAGS) -c $<

.c.o :
    $(CC) $(CFLAGS) -c $<

# steps
product: $(MAINOBJ) $(CRCOBJ)
    $(CPP) $(CFLAGS) -o mkdata mkdata.C
    $(CPP) $(CFLAGS) -o mkindx mkindx.C $(CRCOBJ)
    $(CPP) $(CFLAGS) -o getrec $(MAINOBJ) query.C $(CRCOBJ)
    $(CPP) $(CFLAGS) -o gethash -DSIMPLE_HASH $(MAINOBJ) query.C $(CRCOBJ)
    $(CPP) $(CFLAGS) -o getdirect -DGET_DIRECT $(MAINOBJ) query.C

clean:
    rm -f *.o
```

APPENDIX C

```

#ifndef ATT_fastdb_h
#define ATT_fastdb_h

//
// Common header file for fast index file based on CRC signatures.
//

//
// CRC compute routines
//
#define ushort unsigned short

void crcstr ( register ushort *accum, register unsigned char *str );
void crc16str ( register ushort *accum, register unsigned char *str );

//
// Name:      keyindx_t
//
// Description: Data structure of primary index file.  Contains the
//              the CRC-16 checksum for this "key" and the record
//              "offset" into the Data file.
//
// Note: pragma pack(2) was removed because SUN compiler does not
//       support it properly (crashes when "long" not on 4 byte boundary)
//       So to line up on 4-byte boundary, I added "short" reclen to
//       data structure, increasing index entry size to 8 bytes.
//
//       The test results in the patent application were done
//       with pragma pack(2) enabled on GNU compiler and without
//       the reclen field.
//
// #pragma pack(2)          // pack on 2 byte boundary
typedef struct {
    unsigned short  crc16;  // CRC-16 checksum for key
    unsigned short  reclen; // length of record
    unsigned long   offset; // record index in Data file
} keyindx_t;
// #pragma pack()          // restore default packing

// Number of entries in CRC-index file, 2**16
#define CRCTABLESIZE 65536

// Number of entries in CRC-bucket
// This should be a tunable parameter based on the
// the number of records in the Data base.
#define CRCBUCKETSIZE 100

// Maximum offset for 32-bit file, marks unused entries on CRC-index table
#define MAXOFFSET 0xffffffff

// Maximum record length in Data file
#define MAXRECORD 128

#endif /* #ifndef ATT_fastdb_h */

```